(19) Europäisches Pat ntamt
European Patent Office
Office européen des brevets

(11) EP 0 768 042 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
16.04.1997 Bulletin 1997/16

(51) Int. Cl.[6]: **A23L 1/24**; A23L 1/0532

(21) Application number: **95202774.6**

(22) Date of filing: **13.10.1995**

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
SI

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(54) A mayonnaise-like product

(57) The invention concerns a mayonnaise-like product, which is fat free or low fat, comprising less than 20% of edible oil, vinegar, water, yoghurt and carrageenan.

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Printed by Rank Xerox (UK) Business Services
2.14.2.3.4

Description

The invention concerns a mayonnaise-like product.

Mayonnaise is known in the art as being a thick emulsified food dressing prepared from edible oil, water, egg yolk containing materials and vinegar. For being designated as a mayonnaise according to existing legislation a product must contain at least 60 % oil. Although, nowadays the tendency in the market, taking in account the desires of the consumer, is to reduce the oil content and to have the above mentioned emulsified products with an oil content of less than 60 % : these products cannot any more receive the name of mayonnaise and are therefore designated as mayonnaise-like products.

The existing literature already mentions mayonnaise-like products. The German patent DE 1924465 concerns a mayonnaise-like product containing from 15 to 35 % of oil, from 6 to 10 % of egg yolk, from 5 to 10 % of low fat curd, and other minor components as sugar, salt and vinegar. The problem with such a composition is the presence of egg yolk, which gives a composition which is not cholesterol-free and is not heat stable. The German patent DE 2145979 concerns a mayonnaise-like product containing 30 % or more oil, and between 20 and 80 % of curd or yoghurt. For having a mayonnaise-like product, it is necessary to have a certain viscosity and a texture (fat-equivalent mouth feeling) : the presence of quark or yoghurt does not bring a sufficient viscosity and texture , but this is reached taking into account the high level of oil. Finally, the FR patent 2623376 concerns a mayonnaise-like product containing from 15 to 60 % of yoghurt, cream, white cheese and egg yolk. The presence of egg yolk is not desired for the reasons given above and furthermore, cream and white cheese increase the viscosity but also the oil content. All these three patents mention the possibility of adding yoghurt or quark : the reason for this addition is to give to the final product an opacity similar to that of a mayonnaise and this is also desired for the present invention.

The aim of the present invention is to have a heat stable mayonnaise-like product, meaning with an oil content of 20 % or less and having at least a combination of the following four factors : an opacity, a viscosity, a texture and a taste equivalent to that of a normal mayonnaise.

The invention concerns a mayonnaise-like product, comprising less than 20 % edible oil, vinegar, water and further yoghurt and carrageenan.

The edible oil used can be of any type, for example a vegetable oil such as soy oil.

According to the invention, it has been found that the whitening efficiency of yoghurt is increased by the synergism with carrageenan. The use of only yoghurt as an ingredient, even at higher concentrations, does not improve the appearance clearly. In the present composition, the yoghurt is present in an amount of from 5 to 50 %. In the present specification, all the percentages are given in weight and for the yoghurt content, the amount is given based on the wet product. The yoghurt used can be of any type, for example a yoghurt based on full-cream milk or skimmed milk.

Texture is defined as being what is perceived with a spoon or in the mouth in relation to a mayonnaise impression. Texture of fat-free mayonnaise-like products is critical and an ingredient composition has to be found with optimal texture quality. A targeted design of the texture becomes possible based on the synergism between the carrageenan and the casein micelles of the yoghurt. This synergism results in a slight gelatinization which can be controlled by the concentration of the reactants. This slight gelatinization leads to a short , creamy and non-sticky texture, but can not be compared with strong gelling substances which lead to a rigid texture and sometimes to a rough structure. Examples for such strong gelling substances are agar or the combination of xanthan with locust bean gum. The viscosity is finally similar to that of a classical mayonnaise.

Heat stability of the composition was also a major aim to enable hot filling of the product and by this to renounce on preservatives. Regarding the manufacturing principle, it was the aim to find the most simple solution with the minimum processing effort. Both, processing and ingredients costs should be minimal : this is the case with the obtained composition.

The carrageenan is present in an amount of from 0.03 to 1%: a too low amount would not lead to the above mentioned synergism and a too high amount would give a real gelatinization. Most preferably, the carrageenan used is kappa-carrageenan.

All the four above mentioned factors can be further improved by adding to the composition a starch in the amount of from 2 to 6 %. This starch is a hydroxypropyl or acetylated starch. Preferably, the starch used is the hydroxypropyl distarch phosphate or the acetylated distarch adipate, the phosphorylated distarch phosphate or the acetylated distarch phosphate.

If starch is present in the composition, it is normally preferable to add in said composition a non-gelling hydrocolloid like xanthan. The application of such a non-gelling hydrocolloid is effective particularly when the composition is based on acetylated distarch adipate. Best texture properties, however, are achieved when hydroxypropyl distarch phosphate is used in combination with yoghurt, kappa-carrageenan and xanthan. This starch is very stable against retrogradation and contributes to the creamy behaviour of the composition. The composition contains preferably of from 0 to 0.4% of xanthan.

A substance also potentially suited as whitening agent is skim milk powder. However, due to its high casein content and the low pH of the mayonnaise-like product, precipitation occurs, resulting in an unacceptable sandy mouthfeel of

the product. It has now been found that the precipitation of the proteins in skim milk powder can be prevented by the use of the emulsifier DATEM (diacetyl tartaric esters of mono- and diglycerides). According to this phenomenon, the application of skim milk powder or casein for improving the appearance of mayonnaise-like product becomes possible and has furthermore the additional advantage of contributing to an improved texture. Skim milk powder or casein is present in the composition in the amount of from 1 to 10 % and DATEM in the amount of from 0.3 to 4 %.

The mayonnaise-like product according to the invention contains further of from 0 to 25% of vegetable pieces. Any type of vegetable can be used, for example onion or cucumber.

The product of the invention comprises also, if necessary, salt and/or sugar, aromas and ingredients which lead to savoury.

With the described composition, the aim of the most simple processing only including mixing and hot filling became possible. The heat treatment before hot filling occurs in a classical way, at around 80 °C during from several seconds to 20 minutes. The hot filling is made into the corresponding jars, which are then cooled : we reach a shelf stability of at least 12 months.

According to this procedure, it is also possible to renounce on preservatives without any microbiological risk, contributing to a consumer friendly ingredient list of the product. Both, the simple processing and the use of standard raw materials, not being specially developed as fat replacers, contribute to very low product costs.

Examples are now described by way of illustration only.

Example 1

A screening for the effect of hydrocolloids in a yoghurt fat-free mayonnaise-like product was carried out using the following recipe :

Ingredient	%
water	59.0
yoghurt	9.7
maltodextrin	10.0
sucrose	6.0
acetylated distarch adipate	5.5
spirit vinegar (11%)	5.0
lactose	3.0
salt	1.5
hydrocolloid	0.3
Total	100.0

The mayonnaise-like products were prepared using a batch mixer. All raw materials were degassed, mixed, heated to 85 °C and filled in glass jars. The results can be seen from the following table :

Hydrocolloid	Sensorial description of the texture	Viscosity at 40 Pa in Pas
without (reference)	thin	48
Propylene glycol alginate	long	142
Compound of xanthan, locust bean gum and guar gum	gelatinized	10140
xanthan	thick	290
gellan	thick	175
Compound of guar gum,xanthan, carrageenan	thick, sticky	4043
kappa-carrageenan	short,thick, creamy	81980

The viscosity was measured using a Bohlin CS 50 rheometer. The product has the best texture when the viscosity is maximal without showing an off-texture like gelatinized or sticky and long. This is the case for kappa-carrageenan.

Example 2

Fat-free mayonnaise-like products were prepared with the same processing as described in example 1. The basic recipe for all products can be seen from the following table :

Ingredients	%
salt	1.5
sucrose	7.5
maltodextrin	3.5
lactose	3.0
spirit vinegar (11%)	5.2
flavors	0.6
yoghurt	17.0
starch (see following table)	4.0
hydrocolloids (see following table)	0-0.4
water	add to 100 %

Detailed information on the starch and the hydrocolloids as well as the sensorial product evaluation can be seen from the following table :

Ingredients	Appearance	Texture
acetylated distarch adipate (4%)	very glassy, slightly rough	slightly gelatinized
hydroxypropyl distarch phosphate (4%)	very glassy, slightly rough	thick
acetylated distarch adipate (4%), kappa-carrageenan (0.2%),xanthan (0.2%)	glassy,smooth	creamy
hydroxypropyl distarch phosphate (4%), kappa-carrageenan (0.2%), xanthan (0.2%)	glassy, smooth	thick, creamy

It can be seen that the use of kappa-carrageenan results in a creamy product and reduces the glassy appearance. Best texture and appearance were obtained by the use of kappa-carrageenan and xanthan in combination with hydroxypropyl distarch phosphate.

Example 3

Products with the same basic recipe as in the preceding example were manufactured with acetylated distarch adipate (4%) and kappa-carrageenan (0.2%). A second product was produced with additionally 0.2 % xanthan. With this latter product, absolutely no side product detachment in the glass jars was observed.

Example 4

Products with the same basic recipe as in example 2 were manufactured using hydroxypropyl distarch phosphate (4%), xanthan (0.2 %) and kappa-carrageenan (0.2 %). Further ingredients used and results of the sensorial product evaluation can be seen from the following table.

Ingredients	Appearance	Texture
Skim milk powder (3.5 %)	white, not glassy	sandy, very thick, creamy
Skim milk powder (3.5%), DATEM (1.5%)	white, not glassy	not sandy, very thick, creamy

The results show that skim milk powder leads to a white product and prevents a transparent product appearance. The sandiness arising with skim milk powder can be prevented by the additional use of the emulsifier DATEM. Furthermore, in comparison with the results of example 2, it can be seen that these ingredients positively also contribute to an improved product texture.

As already stated in example 1, the filling of the glass jars occur at a temperature of around 80 °C during about 20 min and the obtained mayonnaise-like product retains all its properties of opacity, texture, taste and viscosity during at least 12 months.

It is possible according to the invention to propose to the consumer a substantially fat-free mayonnaise-like product presenting characteristics very near to a normal mayonnaise.

Claims

1. A mayonnaise-like product, which is fat-free or low fat, comprising less than 20 % edible oil , vinegar and water, characterised in that it contains further yoghurt and carrageenan.

2. A mayonnaise-like product, characterised in that it contains further starch.

3. A mayonnaise-like product according to claims 1 or 2, characterised in that the yoghurt is present in an amount of from about 5 to 50 %.

4. A mayonnaise-like product according to any of claims 1 to 3, characterised in that the carrageenan is present in an amount of from 0.03 to 1%.

5. A mayonnaise-like product according to any of claims 1 to 4, characterised in that the starch is present in an amount of from 2 to 6 %.

6. A mayonnaise-like product according to any of claims 1 to 5, characterised in that the carrageenan is kappa-carrageenan.

7. A mayonnaise-like product according to any of claims 1 to 6, characterised in that the starch is selected from the group consisting of hydroxypropyl distarch phosphate and acetylated distarch adipate, phosphorylated distarch phosphate and acetylated distarch phosphate.

8. A mayonnaise-like product according to any of claims 1 to 7, characterised in that it contains further from 0 to 0.4% of xanthan.

9. A mayonnaise-like product according to any of claims 1 to 8, characterised in that it contains further from 1 to 10 % of skim milk powder or casein and from 0.3 to 4 % of diacetyl tartaric esters of mono- and diglycerides.

10. A mayonnaise-like product according to any of claims 1 to 9, characterised in that it contains further from 0 to 25% of vegetable pieces.

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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 2774

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	EP-A-0 049 927 (DMV-CAMPINA) * page 3, line 12-17; claims 1,2 * * examples I-III *	1,2 3-10	A23L1/24 A23L1/0532
A	WO-A-93 15617 (DANISH CROWN) * claims *	1,7	
D,A	FR-A-2 623 376 (LA PROSPERITE FERMIERE) * claims 1-9 *	1,3,10	
D,A	DE-A-21 45 979 (BUTTER-ABSATZ ZENTRALE NIEDERSACHSEN) * the whole document *	1	
D,A	DE-A-19 24 465 (H.WEIDEMANN) * the whole document *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A23L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 March 1996	Van Moer, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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